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ABSTRACT

In the absence of a vaccine or a specific treatment the prevention of dengue aims at reducing the density of the vectors, *Aedes aegypti* and *Ae .albopictus*. Behavioural interventions carried out in other countries have shown a high impact on reduction of *Ae.* larval indices. The present study aimed to develop, implement and evaluate a behavioural intervention for dengue prevention. In order to achieve these objectives, a community based intervention trial was carried out in the Colombo Municipal Council area (CMC).

The study consisted of three stages. In stage one a pre intervention survey gathered baseline data. The behavioural intervention was developed and implemented in stage two. Stage three evaluated the impact of the intervention.

Five hundred households, each from the intervention and control areas were selected using multistage sampling technique and GIS technology. The study was conducted in ten randomly selected Municipal wards and included 20 study clusters of 50 households each. The participation rate was high in both the intervention (93.2%) and control groups (93.0%).

Information on socio-demographic characteristics, environmental factors, knowledge, attitudes, practices, behaviours, larval parameters and disease incidence at the baseline were assessed. All the data collecting instruments were pre tested and showed good test re-test reliability.

Both groups were similar in respect of socio-demographic and economic characteristics. Environmental risk factors within the clusters and in the neighbourhood were similar. At the baseline, respondents in both groups were similar in knowledge. Awareness of vector bionomics was relatively low compared to the knowledge on dengue infection and prevention. The two groups were also similar in their attitudes and practices.

In the pre intervention survey it was seen that during the three months preceding the study 86% of households and the previous seven days almost 50% of households from each group practised dengue prevention behaviours. The majority in both groups practised non productive alternative behaviours taking long time durations. Lack of time and home-help were the common reasons for not conducting dengue prevention activities.

All three larval indices (House Index-HI, Container Index-CI and Breteau Index-BI) were high and similar in both groups in the pre intervention stage. Almost 50% of households had at least one water holding receptacle / material /item with or without *Aedes* breeding per household in both groups (P=0.26). Both groups were similar (P=0.45) with the majority of larval habitats (over 70%) that were scattered in the peri-domestic environments. The common breeding habitats in both groups were discarded receptacles, water storage containers, domestic appliances and tyres. *Ae. aegypti* was the predominant species in the majority of larval habitats.

The number of IgM positive dengue patients detected in both groups during the pre intervention survey was low.

The behavioural intervention was developed based on baseline data in consultation with experts in the field. The intervention was pilot tested before implementation through the existing health staff who were specially trained for the activity. Coverage, the quality of the programme and the compliance of respondents with the recommended behaviours were satisfactory.

The intervention and control areas were evaluated three months after the completion of the intervention. A statistically significant improvement in knowledge on dengue infection (Mean 48.2% to 65.7%) vector bionomics (Mean 37.6% to 53%) and dengue prevention (Mean 42.9% to 53.5%) occurred in the intervention group compared to the the pre intervention level of knowledge and the post intervention values of the control group. There was an improvement in attitudes and day to day practices of the respondents

in the intervention group compared to its pre intervention values and to the control group at post intervention.

Changing the behaviour of the respondents was the primary outcome of the intervention. In the intervention group a statistically significant increase was seen in the percentage (46.4% to 73.4%; P<0.001) of households that were engaged in the recommended behaviours regularly following the intervention. A similar change was not observed in the control group.

The number of confirmed dengue patients during the 3 months following the intervention was very low. Therefore larval indices formed the only indicator to assess the impact of the intervention.

The behavioural intervention implemented was able to reduce significantly all three larval indices (HI-23.3% to 11.6%, P<0.001; CI-33.9% to 23.8%, P<0.008; BI- 29.8% to12.3%, P<0.001) in the intervention group compared to pre and post intervention and with the intervention and control group, post intervention. Breeding habitats in the intervention group decreased significantly compared to the control group at post intervention survey and also in comparison to the results of the control group. Following the intervention there was a reduction in the total number of discarded receptacles tyres and natural habitats. The number of potential water storage tanks and ornamental ponds in the intervention group also reduced.

The intervention enabled and was beneficial in improving the expected output (knowledge, attitudes and practices). It was able to achieve the expected behavioural results as reflected by the statistically significant reduction of all the larval indices, and other larval parameters evidenced that the intervention carried out was effective. The incorporation of similar programmes for prevention of dengue through behavioural change, to the public health system of the Sri Lanka seems feasible.